

Near and Mid-Term CNS Technology R&D Needs

■ Spectrum Issues

- Lack of frequencies/ different concepts
- Data link requirements for terminal area link? Too much data linking for the tactical phase of flight may be concern
 - C-band? 400Mhz
- How far can you get with a terminal data link in a 2007 time frame?
- Any analysis as to how many data link you need . .
- A creative data link allocation strategy
- What up-date rates would improve decision support services
- Equipage transmission issue for VHF
- How to expand spectrum?
- The FAA has a study in place that says we will run out of spectrum by year 2009

- Should look at other frequencies outside of spectrum
- More study and analysis needs to be done on the future of Nexcom system
- Frequency recapture/reuse

■ CPDLC ISSUES

- Goal of 5 seconds for one way communications from the controller to the pilot for terminal area, but building system around 10 second enroute goal.

■ VDL Issues

- We need to use mode 2, they don't have AOA customers signed up
- Possibility with mode 2 for a lot of interference (antenna issue)
- Is there a role for NASA in this VDL-3 for NEXCOM
- What if we go the VDL-3 route?

■ Networking Issues

- ATN vs IP networking issue
- IP-6 viable alternative for ATN

■ Antenna Issues

- Near term issue to put more and more antennas up
- Such a diverse problem to integrate antennas
- VHF antenna usage study might make some sense
- A stakeholder is GA

■ Safety standpoint

- Moving from a data-link airspace to a non-data-link airspace
 - Hybrid systems issues
 - Getting together with SATS program to do a demo
 - What are the the trade offs between latency/ hand-off issues, etc.?

■ Collaboration and Decision Making

- NASA needs to come out as an advocate for a specific solution
- There needs to be a process to fast-track things (Y2K paradigm)
- Industry and government need to get together and make a decision
- Issues need to be put in front of the people who need to know (congress)
- Consensus for CNS requirements
- Lack of consistent definitions, no strong consensus on requirements
- A tool to manage discrepancies needs to be present

- Utilize the DO264 as a baseline for definitions, terms, and requirements

■ SATS Related

- Where do we start putting RCP in (technical roadmap for RCP and SATS)
- Want high-level requirements on RCP and RNP integrating legacy systems with the SATS etc.
- What does class SATS airspace mean for aviation?
- Firming-up of information content; categorize

■ Modeling and Simulation

- Near term resolution modeling is not the type that we need
- Should NASA's role be to look at simulation/CNS issues?
- Goal in developing lab capability

■ Identify stakeholders ...ID research

- Avionics/Airframe manufacturers

- Service providers

 - Communication SP

 - ATC SP

 - Weather service

 - Internet services

 - Other FIS

 - Satellite owners

- Airline owners

- GA/airline pilots and owners

- DOD

- Certification folks

- Airports

- Public

- Regulatory agencies/FCC